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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/509,295

08/30/2005

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EXAMINER

LIGHTFOOT, ELENA TSOY

ART UNIT

PAPER NUMBER

1792

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,295	Applicant(s) BADYAL ET AL.	
	Examiner Elena Tsoy Lightfoot	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 10-12 and 22-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 13-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

Applicant's election without traverse of Species (II): spraying and atomization deposition, in the reply filed on June 24, 2009 is acknowledged.

Status of the Claims

Claims 1-28 are pending in the application. Claims 22-28 and species (I), (III), (IV) (spin coating, solvent casting, dipping, plasma deposition and chemical vapor deposition) are withdrawn from consideration as directed to a non-elected invention and species.

Examiner Note

In the absence of definition, claimed term "atomization" is interpreted broadly as "spraying".

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-9, and 13-21 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. The term "comprising" or "consisting of" that is critical or essential to the practice of the invention **is missing** in claim 1. The scope of invention would be different if claim 1 recites "said method comprising" or recites "said method consisting of". Thus, the missing term "comprising" or "consisting of" is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

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In the absence of the term “comprising” or “consisting of” the scope of claimed invention is uncertain.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 8-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8, lines 1-2, a phrase “wherein a polymer coating forms at least the outer surface of the coating applied to the substrate” renders the claim indefinite because the meaning of the phrase is not clear. For examining purposes the phrase was interpreted as “wherein a polymer coating forms at least part of the outer surface of the coating applied to the substrate”.

Claim 15 recites the limitation “the fluorinated surface” and “the unmodified, unsaturated polymer below the fluorinated surface” in lines 1-2. There is insufficient antecedent basis for this limitations in the claim.

Claim 18 recites “A method for applying a coating having liquid repellent characteristics to a substrate, said method comprising the steps of applying a coating to the substrate surface, said coating having at least an outer layer of a polymer including unsaturated bonds”, which renders the claim indefinite because it is not clear whether at least a portion of the outer layer of the coating is formed of a polymer or the coating has outer and inner layers and the polymer forms only the outer layer.

Claim 18 recites “said polymer being fluorinated and cured” which contradicts further limitation “and wherein the fluorination and/or curing is performed on the polymer material in a

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selected pattern so as to provide selectively fluorinated and/or cured portions and selectively unfluorinated and/or uncured portions of said coating”. For examining purposes the limitation “said polymer being fluorinated and cured” was interpreted as “said polymer being fluorinated and/or cured” to make consistent with further limitations.

The language of claim 19 is confusing because it is not clear whether the term “completely” refers to “whole” area of coating or to “fully” curing the selected portion. For examining purposes the phrase was interpreted as curing the whole area of applied coating.

Claim Objections

5. Claims 10-12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot refer back to another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 10-12 are not been further treated on the merits.

Claims 1-9, 13-21 and species (II) are examined on the merits.

6. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19 recites that the selection is made to completely cure the coating whereas claim 18 on which it depends recites that selection is made to cure the coating only on a portion of the substrate.

7. Claim 1 is objected to because of the following informalities: “...to form at least part of the coating fluorinating the surface of said coating on the substrate and/or curing at least part of the said coating” should be changed to “...to form at least part of the coating₂ fluorinating the

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surface of said coating on the substrate and/or curing at least part of the said coating” for clearer understanding. Appropriate correction is required.

8. Claim 1 is objected to because of the following informalities: “atomisation” should be changed to “atomization”. Appropriate correction is required.

Claim 18 is objected to because of the following informalities: “A method for applying a coating having liquid repellent characteristics to a substrate, said method comprising the steps of applying a coating to the substrate surface, said coating have at least an outer layer of a polymer including unsaturated bonds” should be changed to “A method for applying a coating having liquid repellent characteristics to a substrate, said method comprising the steps of applying a coating to the substrate surface, said coating haveing at least an outer layer of a polymer including unsaturated bonds”.

9. Claim 20 is objected to because of the following informalities: “mashing” should be changed to “masking”. Appropriate correction is required.

10. Claim 20 is objected to because of the following informalities: “electron” should be changed to “electron beam”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-9, 13-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nordstrom (US 3719723).

Nordstrom discloses a method of applying a coating to a surface of a substrate, said method comprising the steps of applying a radiation-curable coating composition, which is a *mixture* unsaturated epoxy resin and unsaturated siloxane (claimed polymer material) to the said substrate surface to form painted surface, and curing the coated surface (See column 1, lines 5-21) with electron beam radiation (See column 5, lines 15-47) to form a surface having high resistance to weathering (See column 1, lines 5-7). The coating may be applied by *conventional* paint application techniques, e.g. **spraying**, roll coating, etc. (See column 7, lines 10-20).

As to claim 3, the unsaturated siloxane may be prepared by polymerization of a lower molecular weight siloxane (See column 4, lines 1-5). The unsaturated epoxy resins are prepared by reacting a diepoxide with unsaturated carboxylic acid (See column 6, lines 32-55). Thus, the unsaturated siloxane reads on claimed homopolymer, and the unsaturated epoxy resin reads on claimed copolymer.

As to claims 13-17, fluorination of the coating is not addressed as being an *optional* limitation.

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14. Claims 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stirniman et al (US 6589641) in view of Liu et al (US 6849304).

Stirniman et al discloses a method of forming a lubrication layer of crosslinked fluoropolymer on a carbon substrate of magnetic data storage disc (See Abstract; column 3, lines 32-35), the method comprising the steps of applying uncrosslinked fluoropolymer coating to the substrate surface, and performing curing of the fluoropolymer in a selected pattern so as to provide selectively cured portions and selectively uncured portions of said coating (See column 6, line 56 to column 7, line 5). The lubricant layer serves to decrease friction between a head and the disc, to provide some additional protection against impact and to seal the surface to inhibit corrosion of underlying magnetic layers by water coming into contact with the surface (See column 4, lines 11-15). Fluorine containing polyethers such as saturated perfluoropolyethers (See column 4, lines 39-42) and hydrofluoropolyethers are *preferred* in the lubricant layer due to their hydrophobic character (See column 4, lines 15-19). In preferred embodiments, the crosslinked fluoropolymer layer has a water contact angle greater than about 100 degrees (See column 7, lines 28-32).

Stirniman et al fails to teach that unsaturated perfluoropolyethers are used for forming a lubricant layer (Claim 18).

However, Liu et al teaches that unsaturated perfluoropolyethers form *elastomeric* lubricant topcoat upon UV curing that is capable of substantially reproducing textured surface on various magnetic recording media (See column 9, lines 1-12). The lubricant topcoat provides a water contact angle greater than about 100 degrees (See Fig. 5).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used unsaturated perfluoropolyethers in Stirniman et al instead of saturated perfluoropolyethers with the expectation of providing the desired *elastomeric* lubricant topcoat having a water contact angle greater than about 100 degrees, as taught by Liu et al, since Stirniman et al does not limit its teaching to particular fluoropolymers.

Moreover, it is held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used unsaturated perfluoropolyethers in Stirniman et al with the expectation of providing the desired water contact angle greater than about 100 degrees, as taught by Liu et al, since Stirniman et al does not limit its teaching to particular fluoropolymers.

As to claims 19 and 21, limitations of claims 19 and 21 are not addressed because they are *optional*.

As to claim 20, Stirniman et al teaches the selective crosslinking to vary the location of the crosslinked polymer layer can be accomplished using a mask (**claimed spacially resolved means**) to block the crosslinking radiation, such as *ultraviolet light or electron bombardment* (See column 8, lines 39-42), from striking portions of the substrate (See column 8, lines 55-57).

15. Claims 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al '304 in view of Stirniman et al '641.

Liu et al discloses a method of forming a lubricant film of crosslinked fluoropolymer on a carbon substrate of magnetic recording medium, the method comprising the steps of applying a

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coating of unsaturated fluoropolymer to the substrate surface (See column 6, lines 18-25), and performing curing of the fluoropolymer by exposure to UV (See column 6, lines 42-50).

Liu et al fails to teach forming selectively crosslinked portions and selectively uncrosslinked portions of the fluoropolymer.

However, Stirniman et al teaches that a lubricant topcoat can be cured through a mask to obtain crosslinked portions only on a landing area (See column 8, lines 62-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a lubricant film of crosslinked fluoropolymer in Liu et al by pattern crosslinking the applied fluoropolymer coating, as taught by Stirniman et al, with the expectation of providing the desired magnetic recording medium having a lubricant topcoat only on portions of the substrate, e.g. on a landing area.

As to claims 19 and 21, limitations of claims 19 and 21 are not addressed because they are *optional*.

As to claim 20, Stirniman et al teaches the selective crosslinking to vary the location of the crosslinked polymer layer can be accomplished using a mask (**claimed spacially resolved means**) to block the crosslinking radiation, such as *ultraviolet light or electron bombardment* (See column 8, lines 39-42), from striking portions of the substrate (See column 8, lines 55-57).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy Lightfoot whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy Lightfoot, Ph.D.
Primary Examiner
Art Unit 1792

August 6, 2009

/Elena Tsoy Lightfoot/